What is claim d is:

1. An optical member comprising:

a luminous flux conversion portion formed on the surface of an optical substrate;

an edge portion formed along a part of the circumference of said luminous flux conversion portion; and

a handling portion which is provided on the side of the other part of the circumference of said luminous flux conversion portion approximately in a plane approximately in parallel with the surface of said luminous flux conversion portion, and is extended with a width wider than said luminous flux portion.

2. An optical member as claimed in claim 1, wherein said handling portion has a form extending straightforward and is integrated with said edge portion at an approximately middle point between both ends thereof.

3. An optical member as claimed in claim 1, wherein said handling portion takes the form of an approximately rectangular parallelepiped, said edge portion takes the form of an approximately circular arc, and said circular arc form extends from formation plane side of said luminous flux conversion portion to the opposite plane side thereof, thereby forming a projection portion of the semi-cylindrical type.

4. An optical member as claimed in claim 1, wherein said handling portion has a flat plane.

5. An optical member as claimed in claim 4, wherein said handling portion has a form extending straightforward, and said flat plane is a

plane existing along the direction toward which said handling portion extends, and is approximately vertical to the surface of said luminous flux conversion portion.

6. An optical member as claimed in claim 1, wherein said handling portion is asymmetrically formed with respect to a virtual plane which includes the optical axis of said luminous flux conversion portion and goes across said handling portion, in order to identify either one of both surfaces of said optical substrate.

7. An optical member as claimed in claim 1, wherein said handling portion includes a guide mark for identifying either of both surfaces of said optical substrate.

8. An optical member as claimed in claim 1, wherein said optical member is an optical member to be mounted on a supporting substrate, said optical member being provided with a positioning mark formed on the plane which is approximately vertical to the surface of said luminous flux conversion portion in said handling portion and approaches said supporting substrate at the time of mounting said optical member.

9. An optical member as claimed in claim 8, wherein said positioning mark takes the form of a groove, of which the cross section has one of the shapes of an approximately V-shape, an approximately trapezoid shape, an approximately semicircular shape, an approximately rectangle shape, and an approximately square shape.

10. An optical member as claimed in claim 8, wherein said positioning mark is asymmetrically formed with respect to a virtual

plane which includes the optical axis of said luminous flux conversion portion and goes across said handling portion, in order to identify either one of both surfaces of said optical substrate.

11. An optical member as claimed in claim 1 wherein, said optical member is an optical member which is arranged on a groove portion as formed on said supporting substrate for use in arrangement of optical members, such that it opposes to the end face of an optical fiber placed on said groove portion and achieves an optical coupling with said optical fiber,

said edge portion has a circular arc form, which extends from said luminous flux conversion portion formation plane side to the opposite plane side thereof, and the outer diameter of said circular arc shape is made approximately equal to that of said optical fiber.

12. An optical member as claimed in claim 1, wherein said optical substrate is a silicon crystalline substrate.

13. An optical member as claimed in claim 1, wherein said luminous flux conversion portion is made up of diffractive optical elements.

14. An optical member as claimed in claim 1, wherein said luminous flux conversion portion is a lens.

15. An optical member comprising:

a plurality of luminous flux conversion portions formed on the surface of an optical substrate;

edge portions formed along a part of respective circumferences of a plurality of said luminous flux conversion portions; and

a handling/supporting portion which is provided on the side of the other part of respective circumferences of a plurality of said luminous flux conversion portions and is extended in a plane approximately in parallel with the surface of said luminous flux conversion portions, and connects and supports a plurality of said luminous flux conversion portions together.

16. An optical member as claimed in claim 15, wherein a plurality of said luminous flux portions are formed in the shape of an array, and said handling/supporting portion has a form extending along the longitudinal direction of said array.

17. An optical member as claimed in claim 15, wherein said optical substrate is a silicon crystalline substrate.

18. An optical member as claimed in claim 15, wherein said luminous flux conversion portion is made up of diffractive optical elements.

19. An optical member as claimed in claim 15, wherein said luminous flux conversion portion is a lens.

20. An optical member manufactured by a manufacturing method including:

the first step of forming a plurality of luminous flux conversion portions in the form of an array on an optical substrate; and

the second step of forming an edge portion along a part of the circumference of each of said luminous flux conversion portions, and a handling/supporting portion which is provided on the side of the other part of the circumference of each of said luminous flux conversion

portions and is extended to connect and support at least two of said luminous flux conversion portions together along the array of said luminous flux conversion portions, whereby there is obtained an optical element aggregation provided with a plurality of said luminous flux conversion portions, edge portions corresponding to a plurality of said luminous flux conversion portions, and the handling/supporting portion connecting and supporting these together, said optical member comprising:

at least one of said luminous flux conversion portions;

an edge portion formed along a part of said luminous flux conversion portion; and

a handling/supporting portion connecting and supporting these together.

21. An optical member manufactured by a manufacturing method including:

the first step of forming a plurality of luminous flux conversion portions in the form of an array on an optical substrate;

the second step of forming an edge portion along a part of the circumference of each of said luminous flux conversion portions, and a handling/supporting portion which is provided on the side of the other part of the circumference of each of said luminous flux conversion portions and is extended to connect and support at least two of said luminous flux conversion portions together along the array of said luminous flux conversion portions, whereby there is obtained an optical element aggregation provided with a plurality of said luminous flux conversion portions, edge portions corresponding to a plurality of said luminous flux conversion portions, and the handling/supporting portion connecting and supporting these together and

the third step of cutting said handling/supporting portion at a

predetermined portion, thereby producing a plurality of individually separated optical elements of which each includes at least one of said luminous flux conversion portions, said optical member comprising:

at least one of said luminous flux conversion portions;

an edge portion formed along a part of said luminous flux conversion portion; and

a handling portion which is formed by cutting said handling/supporting portion and is extended on the side of the other part of the circumstance of said luminous flux conversion portion.

22. An optical member manufactured by a manufacturing method including:

the first step of forming a plurality of luminous flux conversion portions in the form of an array on an optical substrate;

the second step of forming an edge portion along a part of the circumference of each luminous flux conversion portions, a handling/supporting portion which is provided on the side of the other part of the circumference of each of said luminous flux conversion portions and is extended to connect and support at least two luminous flux conversion portions together along the array of said luminous conversion portions, and a nick in at least one predetermined position corresponding to the interval between two of said luminous flux conversion portions in the handling/supporting portion, whereby there is obtained an optical element aggregation provided with a plurality of said luminous flux conversion portions, edge portions corresponding to a plurality of said luminous flux conversion portions, and the handling/supporting portion connecting and supporting these together; and

the third step of cutting said handling/supporting portion at a nick position, thereby producing a plurality of individually separated

optical elements of which each includes at least one of said luminous flux conversion portions, said optical member comprising:

at least one of said luminous flux conversion portions;

an edge portion formed along a part of said luminous flux conversion portion; and

a handling portion which is formed by cutting said handling/supporting portion and is extended on the side of the other part of the circumstance of said luminous flux conversion portion, said handling portion having a part of said nick and a cut face on the side face thereof.

23. A method for manufacturing an optical member comprising:

the first step of forming a plurality of luminous flux conversion portions in the form of an array on an optical substrate; and

the second step of forming an edge portion along a part of the circumference of each of said luminous flux conversion portions, and a handling/supporting portion which is provided on the side of the other part of the circumference of each of said luminous flux conversion portions and is extended to connect and support at least two of said luminous flux conversion portions together along the array of said luminous flux conversion portions, whereby there is obtained an optical element aggregation provided with a plurality of said luminous flux conversion portions, edge portions corresponding to a plurality of said luminous flux conversion portions, and the handling/supporting portion connecting and supporting these together.

24. A method as claimed in claim 23 further comprising the step of cutting said handling/supporting portion at a predetermined position, thereby dividing it into individual optical elements of which each has at least one luminous flux conversion portion.

25. A method as claimed in claim 23 further comprising the steps of:

providing a nick in at least one predetermined position corresponding to the interval between said luminous flux conversion portions in said handling/supporting portion at the time of forming said handling/supporting portion in the second step; and

cutting said handling/supporting portion at the position of said nick, thereby producing individually separated optical elements of which each has at least one luminous flux conversion portion.

26. A method as claimed in claim 23, wherein in said first step, there are two-dimensionally arranged a plurality of said luminous flux conversion portions in a plane approximately in parallel with the surface of said luminous flux conversion portions; and

there are formed in said second step a plurality of said optical element aggregations and a connecting portion for connecting at least each one side end of said handling/supporting potions of a plurality of said optical element aggregations with one another, thereby obtaining an optical element aggregation group.

27. A method as claimed in claim 26 further comprising the step of forming a frame in at least a part of the circumferential edge portion of said optical substrate, said frame being connected with said optical element aggregation group through said connecting portion.

28. A method as claimed in claim 26 further comprising the step of cutting said handling/supporting portion at a predetermined position, thereby dividing it into individual optical elements of which each has at least one luminous flux conversion portion.

29 A method as claimed in claim 26 further comprising the steps of:

providing a nick in at least one predetermined position corresponding to the interval between said luminous flux conversion portions in said handling/supporting portion at the time of forming said handling/supporting portion in the second step; and

cutting said handling/supporting portion at the position of said nick, thereby dividing it into individual optical elements of which each has at least one luminous flux conversion portion

30. A method as claimed in claim 23, wherein there are two-dimensionally arranged in said first step a plurality of said luminous flux conversion portions in a plane approximately in parallel with the surface of said luminous flux conversion portions; and

there are formed in said second step a plurality of said optical element aggregations and a connecting portion for connecting both ends of said handling/supporting potions of a plurality of said optical element aggregations with one another, thereby obtaining an optical element aggregation group.

31. A method as claimed in claim 30 further comprising the step of forming a frame in at least a part of the circumferential edge portion of said optical substrate, said frame being connected with said optical element aggregation group through said connecting portion.

32. A method as claimed in claim 30 further comprising the step of cutting said handling/supporting portion at a predetermined position, thereby dividing it into individual optical elements of which each has at least one luminous flux conversion portion.

33. A method as claimed in claim 30 further comprising the steps of:

providing a nick in at least one predetermined position corresponding to the interval between said luminous flux conversion portions in said handling/supporting portion at the time of forming said handling/supporting portion in the second step; and

cutting said handling/supporting portion at the position of said nick, thereby dividing it into individual optical elements of which each has at least one luminous flux conversion portion.

34. A method for manufacturing an optical member comprising:

the first step of forming a plurality of luminous flux conversion portions in the form of an array on the surface of an upper silicon layer surface of a optical substrate made up of a lower silicon layer, an upper silicon layer and a middle layer intervening therebetween;

the second step of forming a edge portion along a part of the circumference of each of said luminous flux conversion portions by etching said upper silicon layer and at the same time, forming a handling/supporting portion by etching said upper silicon layer, said handling/supporting portion being provided on the side of other part of the circumference of each of said luminous flux conversion portions and extended to connect and support at least two of said luminous flux conversion portions together along the array of said luminous flux conversion portions, thereby obtaining an optical element aggregation provide with a plurality of said luminous flux conversion portions, edge portions corresponding to said luminous flux conversion portions, and the handling/supporting portion for connecting and supporting these altogether; and

the third step of removing said middle layer, thereby separating

said lower silicon layer from said optical element aggregation as obtained by said second step.

35. A method as claimed in claim 34 further comprising the step of cutting said handling/supporting portion at a predetermined position, thereby dividing it into individual optical elements of which each has at least one luminous flux conversion portion.

36. A method as claimed in claim 34 further comprising the steps of:

providing a nick in at least one predetermined position corresponding to the interval between said luminous flux conversion portions in said handling/supporting portion at the time of forming said handling/supporting portion in the second step; and

cutting said handling/supporting portion at the position of said nick, thereby dividing it into individual optical elements of which each has at least one luminous flux conversion portion.

37. A method as claimed in claim 34, wherein in said first step, there are two-dimensionally arranged a plurality of said luminous flux conversion portions in a plane approximately in parallel with the surface of said luminous flux conversion portions; and

there are formed in said second step a plurality of said optical element aggregations and a connecting portion for connecting at least each one side end of said handling/supporting potions of a plurality of said optical element aggregations with one another, thereby obtaining an optical element aggregation group.

38. A method as claimed in claim 37 further comprising the step of forming a frame in at least a part of the circumferential edge portion of

said optical substrate, said frame being connected with said optical element aggregation group through said connecting portion.

39. A method as claimed in claim 37 further comprising the step of cutting said handling/supporting portion at a predetermined position, thereby dividing it into individual optical elements of which each has at least one luminous flux conversion portion.

40. A method as claimed in claim 37 further comprising the steps of:

providing a nick in at least one predetermined position corresponding to the interval between said luminous flux conversion portions in said handling/supporting portion at the time of forming said handling/supporting portion in the second step; and

cutting said handling/supporting portion at the position of said nick, thereby dividing it into individual optical elements of which each has at least one luminous flux conversion portion.

41. A method as claimed in claim 34, wherein there are two-dimensionally arranged in said first step a plurality of said luminous flux conversion portions in a plane approximately in parallel with the surface of said luminous flux conversion portions; and

there are formed in said second step a plurality of said optical element aggregations and a connecting portion for connecting both ends of said handling/supporting potions of a plurality of said optical element aggregations with one another, thereby obtaining an optical element aggregation group.

42. A method as claimed in claim 41 further comprising the step of forming a frame in at least a part of the circumferential edge portion of

said optical substrate, said frame being connected with said optical element aggregation group through said connecting portion.

43. A method as claimed in claim 41 further comprising the step of cutting said handling/supporting portion at a predetermined position, thereby dividing it into individual optical elements of which each has at least one luminous flux conversion portion.

44. A method as claimed in claim 41 further comprising the steps of:

providing a nick in at least one predetermined position corresponding to the interval between said luminous flux conversion portions in said handling/supporting portion at the time of forming said handling/supporting portion in the second step; and

cutting said handling/supporting portion at the position of said nick, thereby dividing it into individual optical elements of which each has at least one luminous flux conversion portion.

45. A method for mounting an optical member having a luminous flux conversion portion on a supporting substrate, comprising the steps of:

forming the first mark for use in positioning on the plane of said optical member, which is approximately vertical to the surface of said luminous flux conversion portion and approaches said supporting substrate at the time of mounting said optical member; and

forming the second mark for use in positioning on said supporting substrate, whereby said optical member is suitably mounted on the supporting substrate with the help of said first mark of said optical member and said second mark on said supporting substrate.

46. A method as claimed in claim 45, wherein the second mark on said supporting substrate is made in the shape of a recess portion.

47. A method as claimed in claim 45, wherein the first mark of said optical member is made in the shape of a groove.

48. A method as claimed in claim 47, wherein the second mark on said supporting substrate is made in the shape of a recess portion.

49. A method as claimed in claim 47, said optical member comprises:

a luminous flux conversion portion formed on the surface of an optical substrate;

an edge portion formed along a part of the circumference of said luminous flux conversion portion; and

a handling portion which is provided on the side of the other part of the circumference of said luminous flux conversion portion in a plane approximately in parallel with the surface of said luminous flux conversion portion, and is extended with a width wider than said luminous flux portion, wherein said groove is formed on said handling portion.

50. A method as claimed in claim 49, wherein the second mark on said supporting substrate is made in the shape of a recess portion.

51. A module comprising:

a supporting substrate on the surface of which a groove portion for use in arranging members thereon is formed;

an optical fiber arranged on said groove portion; and

an optical member arranged on said groove portion such that it opposes to the end face of said optical fiber and achieves an optical coupling therewith, and

said optical member comprising:

a luminous flux conversion portion formed on the surface of an optical substrate;

an edge portion formed along a part of the circumference of said luminous flux conversion portion; and

a handling portion which is provided on the side of the other part of the circumference of said luminous flux conversion portion in a plane approximately in parallel with the surface of said luminous flux conversion portion, and is extended with a width wider than said luminous flux portion.

52 A module as claimed in claim51, wherein said edge portion has a circular arc form, which extends from said luminous flux conversion portion formation plane side to the opposite plane side thereof, and the outer diameter of said circular arc shape is made approximately equal to that of said optical fiber.

53. A module as claimed in claim 51, wherein said supporting substrate is further provided with a mark for positioning use;

said optical member is further provided with a groove for positioning use as formed in a plane which is approximately vertical to the surface of said luminous flux conversion portion in said handling portion and approaches said supporting substrate at the time of mounting optical members; and

said optical member is arranged in part on said groove portion formed on said supporting substrate with the help of said positioning groove of said optical member and said positioning mark on said

supporting substrate.

54. A module as claimed in claim 53, wherein said positioning mark is a recess provided in the direction intersecting said groove portion at right angles.

55. A module comprising:

a supporting substrate on the surface of which a plurality of groove portions for use in arranging members thereon is formed;

a plurality of optical fibers arranged on each of said groove portions; and

optical members arranged on each of said groove portions such that each of them opposes to each end face of each of said optical fibers and achieves an optical coupling therewith, and

said optical member comprising:

a plurality of luminous flux conversion portions formed on the surface of an optical substrate;

edge portions formed along a part of respective circumference of said luminous flux conversion portion; and

a handling/supporting portion which is provided on the side of the other part of respective circumference of a plurality of said luminous flux conversion portions in a plane approximately in parallel with the surface of said luminous flux conversion portion, and is extended to connect and support a plurality of said luminous flux conversion portions together.

56. A module as claimed in claim 55, wherein each end face of a plurality of said optical fibers are arranged to oppose to each of a plurality of luminous flux conversion portions of said optical member; and

Each of said edge portions has a circular arc form, which extends from said luminous flux conversion portion formation plane side to the opposite plane side thereof, and the outer diameter of said circular arc shape is made approximately equal to that of each of said optical fibers opposing to each of said luminous flux conversion portions corresponding to each of said edge portion.

57. A module as claimed in claim 55, wherein said supporting substrate is further provided with a positioning mark ;

said optical member is further provided with a positioning groove as formed in a plane which is approximately vertical to the surface of said luminous flux conversion portion in said handling/supporting portion and approaches said supporting substrate at the time of mounting optical members; and

said optical member is arranged in part on said groove portion formed on said supporting substrate with the help of said positioning groove of said optical member and said positioning mark on said supporting substrate.

58. A module as claimed in claim 57, wherein said position mark is a recess provided in the direction intersecting said groove portion at right angles.